

REMARKS

This application has been reviewed in light of the Office Action dated February 24, 2009. Claims 1-3 are presented for examination, of which Claim 1 is in independent form. Claims 5-8 have been canceled without prejudice or disclaimer of subject matter, and will not be mentioned further. Claims 1-3 have been amended to define still more clearly what Applicants regard as their invention and assure Applicants of a full measure of protection. Favorable reconsideration is respectfully requested.

In the outstanding Office Action, Claims 1-3 were rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Applicants submit that while the present invention may be implemented as a software program, the software program needs to be run on a device or it cannot serve as any of the recited means. Claims 1-3 claim such a device, which includes function expansion boards and a CPU (para. [0111], for example). Moreover, even if Applicants' application said expressly that their claimed device could be implemented entirely by means of software, it is respectfully pointed out that any person of ordinary skill would know that the statement can only meaningfully be understood as premising the use of such software on a hardware machine. Therefore, it is believed that this rejection is not based on a correct reading of the Patent Statute or of the relevant case law.

In addition, Applicants note that the first element recited in Claim 1 is "an image-capturing unit constructed to capture a real object in real space into a taken image." Again, even if the present application said that the "units" referred to in any of the claims could be implemented purely by software (and as shown below the application does not in fact say that), Applicants point out that Fig. 1 shows an example of the image-taking unit 1010. Even apart from the inability of software to operate without a machine to operate on, Applicants submit that

there is not at present any way in which it would be possible for software alone to take an image of a real object in real space, as recited in Claim 1. For this reason, also, this rejection is incorrect.

Third, the portion of Applicants' disclosure cited in the Office Action as allegedly providing basis for this rejection has been seriously misapprehended by the Office. That portion states: "In this case, the software program code itself realizes the functions of the above-described embodiments, and the program code itself, *and means for supplying the program code to the computer, e.g., a storing medium storing program the code, comprise the present invention*. Examples of storing mediums which can be used for storing the program code include floppy (R) disks, hard disks, optical disks, magneto-optical disks, CD-ROMs, magnetic tape, non-volatile memory cards, ROM, and so forth. [Emphases added.]" Thus, the application characterizes, not software but "means for supplying the program code to the computer", such as a computer hard disk or other storage medium, as being a possible embodiment of the invention. On its own terms, therefore, it appears to Applicants that this rejection is improper.

Accordingly, withdrawal of the rejection of Claims 1-3 under Section 101 is respectfully requested.

In addition, Claims 1-3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over "Consolidated Manipulation of Virtual and Real Objects," September 1997, *Proceedings of the ACM Symposium on Virtual Reality Software and Technology*, pages 133-138 (Kitamura et al.) in view of U.S. Patent 6,552,722 (Shih et al.).

Applicants submit that the independent claim, together with its dependent claims, is patentably distinct from the cited prior art for at least the following reasons.

The nature of the present invention has been adequately discussed in previous Amendments, and it is not believed necessary to repeat that discussion in full.

Applicants note again, however, that according to preferred embodiments of the present invention, constraining shapes can be dynamically created (para. [0007]). This capability could be particularly helpful when a virtual reality system is being trained, where various constraining shapes are being inserted into the virtual reality and removed from it soon afterwards. Further, according to the preferred embodiments, to distinguish the potentially temporary nature of such constraining shapes, for example, the constraining shapes can be displayed as translucent images (para. [0060] and [0081]).¹

Claim 1 recites, among other features, “a display unit constructed to translucently display the triangular patch generated by said constraining shape generation unit.”

This feature is not believed to be disclosed or suggested in *Kitamura* and *Shih*, considered separately or in any permissible combination. As Applicants understand, *Kitamura* and *Shih* provide only for the display of opaque images.

A review of the other art of record has failed to reveal anything which, in Applicants’ opinion, would remedy the deficiency of the art discussed above, as references against independent Claim 1. Therefore, the claim is believed to be allowable over the art of record.

Applicants note further that according to preferred embodiments of the present invention, the movement of a virtual object may be limited to two out of three dimensions in a virtual world (para. [0103]). Specifically, while a user is allowed to operate a virtual object operating unit (VOOU) in six degrees of freedom (DOF) as usual, the virtual object is allowed to

¹/ It is to be understood that the scope of the claims is not limited by the details of this or any other embodiment that may be referred to.

move in only those two dimensions, and only movement of the VOOU in those two dimensions is reflected in the movement of the virtual object. This addresses the issue, for example, where it is impossible, undesirable, or unnecessary for the movement of the VOOU in a third dimension to be synchronized with that of the virtual object (para. [0102]).

Claim 2 recites, among other features, “a parallel movement unit constructed to synchronize the position of said virtual object operating unit and that of said virtual object in two dimensions of the virtual image, ignore the movement of said virtual object operating unit in a third dimension, and prohibit the movement of said virtual object in the third dimension even if no collision is likely in the third dimension.”

The feature recited above is also not believed to be disclosed or suggested in *Kitamura* and *Shih*, considered separately or in any permissible combination.

As Applicants understand, a user is allowed to operate a VOOU (tracker device) to manipulate a virtual object in 6 DOF in *Kitamura* (see section 5 on p135). The movement of the virtual object in the virtual world is limited via the following mechanisms only: gravity, friction, and collision and reaction (non-interpenetration, planar magnet, snapping to a surface, and clinging to a wall) (see section 3 on p 134 and Table 1 on p 136). In other words, in *Kitamura*, there is no mention of or motivation for ignoring the movement of the VOOU in a particular dimension of the virtual world and prohibiting the movement of the virtual object in that dimension in the absence of any potential collision. Therefore, *Kitamura* is not believed to disclose or suggest the parallel movement unit of Claim 2.

Shih does not remedy the deficiency noted above. Accordingly, Claim 2 is believed patentable over *Kitamura* and *Shih*, considered separately or in any permissible combination.

Claim 3 in this application is dependent from Claim 1 discussed above and is therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of Claim 3 on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

/Leonard P Diana/
Leonard P. Diana
Attorney for Applicants
Registration No.: 29,296

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

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